



EPD®  
THE INTERNATIONAL EPD® SYSTEM



# Environmental Product **Declaration**

In accordance with ISO 14025 and EN 15804:2012+A2:2019

# Polyethylene Coated Spiral Welded Steel Pipes

from

## MAZLUM STEEL PIPES



#### PROGRAMME

The International EPD® System  
[www.environdec.com](http://www.environdec.com)

EPD Turkey  
[www.edpturkey.org](http://www.edpturkey.org)

#### PROGRAMME OPERATOR

EPD International AB & EPD Turkey

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[environdec.com](http://environdec.com)



# Programme Information

## » Programme Information

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### *Information about verification and reference PCR:*

*CEN standard EN 15804 serves as the Core Product Category Rules (PCR)*

#### **Product category rules (PCR)**

PCR 2019:14 Construction products (EN 15804:A2) Version 1.1

#### **PCR review was conducted by**

*The Technical Committee of the International EPD® System. See [www.environdec.com/TC](http://www.environdec.com/TC) for a list of members.*

*Review chair: Claudia A. Peña, University of Concepción, Chile.*

*The review panel may be contacted via the Secretariat [www.environdec.com/contact](http://www.environdec.com/contact).*

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process verification

EPD verification

#### **Third party verifier**

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#### **Approved by**

International EPD System Technical Committee,  
supported by the Secretariat

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes

No

3

## » LCA Study & EPD Design Conducted by

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**Mazlum Steel Pipes.** has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

# Company Information

## » Owner of the EPD

**Mazlum Mangtay Boru Sondajcılık İnş. Tarım Ürünleri San. Tic. A.Ş.**

Adana Hacı Sabancı OSB İstiklal Caddesi No: 10  
Sarıçam - Adana / Turkey

## Contact

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***Mazlum Steel Pipes, which has the highest standard in the sector with its capacity to make polyethylene coating between 219 mm and 3600 mm diameter, fully complies with the European Union and World Environmental Protection standards.***

Mazlum Steel Pipes started as a Water Drilling Company in the 1950's by Mr. Mazlum Mangtay who was one of the most influential people in this sector. After struggling to procure reliable pipes for drilling, the decision was made in 1987 to start producing our own drilling pipes.

4

After securing a reasonable Market share in the steel pipes sector, the Management decided to implement new technologies and started producing spirally submerged double arc welded steel pipes, becoming one of the Market leaders in this sector. In June 2010 the company moved its factory from 12.000 m<sup>2</sup> facility to a new one in Adana Organize Industrial Area just outside the city. The new **36.000 m<sup>2</sup> facility** includes an area dedicated for polyethylene coating along with all other necessary production stations.

Moreover the addition of a third line machine has made it one of Turkey's most sought-after companies. The new factory has almost doubled the company's production with an **annual capacity now reaching 80.000 tons**, meeting Turkish and international standards.

Mazlum Mangtay, Co. started out as a local family company in Adana and has grown to become one of most established corporations in Turkey and abroad while being ***enterprising, innovative and always making customer satisfaction its goal.***

Mazlum Steel Pipes, proving its reliability at Turkey and abroad by always offering the best products as one of the leading companies in the sector with its continuous investments over the years, continues to strengthen, grow, and add value to our country by exporting 60% of its production to more than 40 countries.

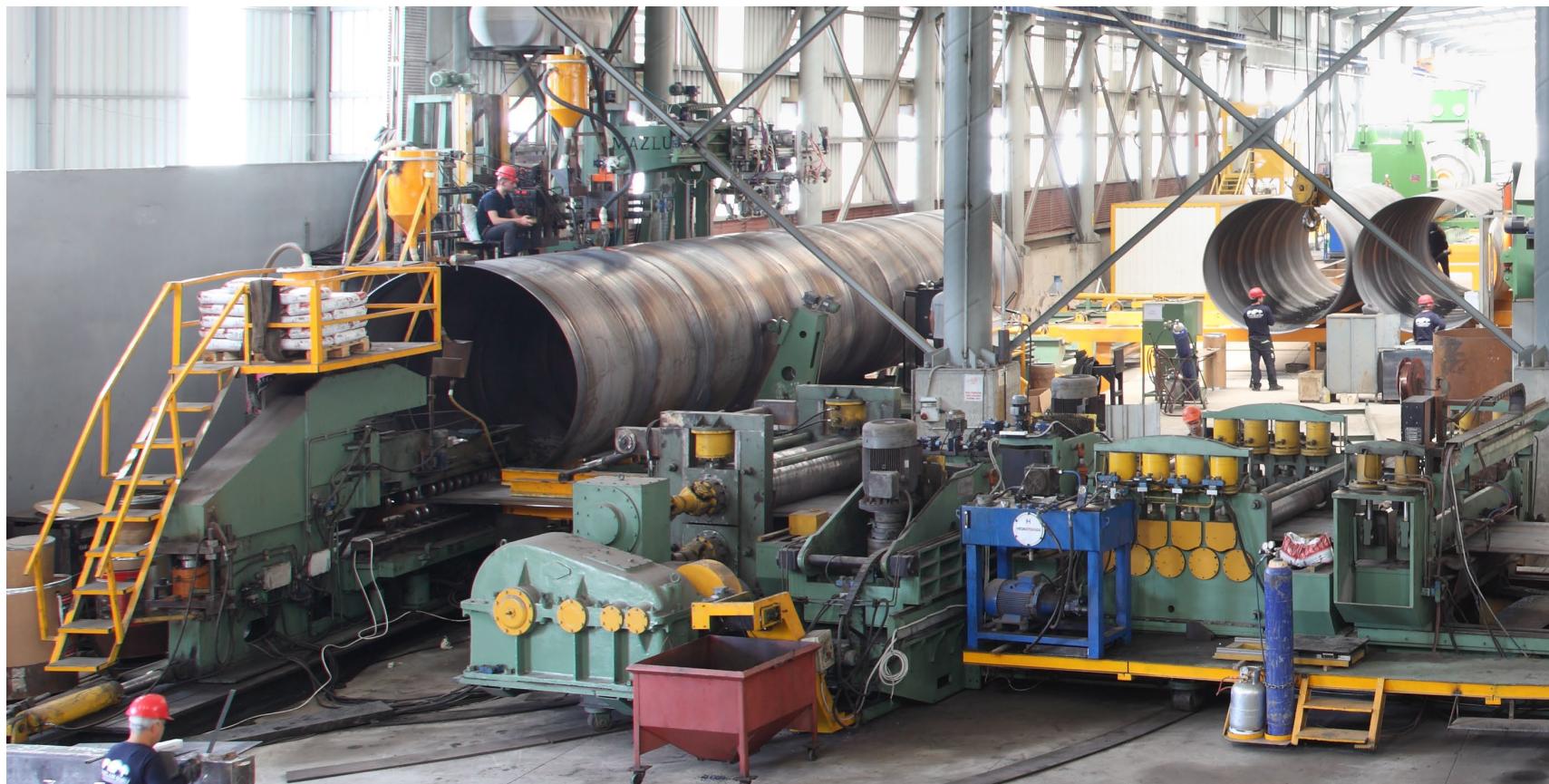




## » Production Site

**Mazlum Mangtay Boru Sondajcılık İnş. Tarım  
Ürünleri San. Tic. A.Ş.**

Adana Hacı Sabancı OSB İstiklal Caddesi No: 10  
Sarıçam - Adana / Turkey



## » Production

Spiral welded steel pipes are used in many different fields; water distribution lines, natural gas distribution lines, steel structures, industrial pipe networks, compressed air lines, transportation of high temperature water, oil pipelines, foundation piles, drilling wells, hydroelectric power plant projects, shipyard and port piles.

Hot rolled coils supplied from Turkey and abroad, after being formed by cold forming in spiral form, are welded internally and externally as single or tandem with the latest technology submerged arc welding method. Before forming, welding mouths are opened in different sizes depending on the thickness of the band edges automatically. This process not only ensures the welding quality and penetration, but also eliminates the band edge defects. Dimensional and visual controls are carried out continuously during forming and submerged arc welding processes. The online ultrasonic device on the machine checks for possible welding errors.

After production and control, the pipes are automatically cut with plasma to the desired length according to the customer's request, taking into account the relevant specifications and standard requirements.

Mazlum Çelik Boru manufactures spiral pipes at a level that meets the requirements of national and international standards such as API, Gost-R, DIN, ASTM, BS, EN, UNI, and can produce with different materials from S235JR quality to API 5L X70M PSL2 quality.

Production is carried out according to;

- During surface preparation, ISO 8501-1, ISO 8501-2, and ISO 8501-3 standards
- For polyethylene coating; TS 5139, EN 10288, DIN 30670, UNI 9099, NFA 49710 AWWA C-215 standards
- For Polypropylene Coating, DIN 30678, NFA 49711 standards
- For polyurethane coating, AWWA C-222 , EN 10290 standards
- In Epoxy Coating; EN 10289, AWWA C-210, NFA 49709 standards.

Depending on production standards and customer requirements, weld seams are controlled by 100% ultrasonic and X-Ray film radiography methods. Spiral Welded Steel Pipes are subjected to 100% tightness test in hydrotest device, depending on the production standard.



7

#### Specifications

- High strength
- High impact and pressure resistance
- High carrying capacity
- Stability
- Long life
- Elasticity
- Formability
- Low maintenance cost
- Environment-friendly
- Cost-effective

#### Production Range

Ø 219.1 mm - Ø 3810 mm (8 5/8" - 150")

#### Wall Thickness

4 mm - 28 mm (0.157" - 1.10")

#### Pipe Length

4 m - 16 m (Special production up to 46 m)

# Product Information

## » Product Name

### Polyethylene Coated Spiral Welded Steel Pipes



8

A dust coating is sprayed onto the cleaned and warmed pipe, creating a sticky coating. When the pipe is hot, liquid polyethylene band is wrapped around the pipe. In order to protect the outer surface against corrosion and to prolong its lifespan, three layers of polyethylene or polypropylene coating are applied. The coating is in accordance with DIN 30670, 30678, TS 5139 and UNI 9099 standards.

Following to surface preparation , pre-heating is managed on a continuous coating line without any risk of deterioration (external pipe wall, bevels, coating) during the various heating, powder spraying, curing and quenching operations. The pipes are heated for coating application with back system. The pipe temperature shall be according to the production and coating norms, The temperature is measured continuously by the control equipment which shall be pyrometer, thermocouples, infra-red sensors, or equivalent proper methods.

No chemical treatment of the surface of steel using

chromates, phosphates or any other chemical is allowed, to improve adhesion. Required adhesion is be obtained only by using suitable fusion bonded epoxy primer and surface preparation.

#### PE Coating Process

- First layer:** Electro statically applied fusion bonded epoxy primer
- Second layer:** Extruded adhesive wrapping
- Third layer:** Extruded polyethylene wrapping

#### Advantages

- Excellent corrosion resistance. When exposed to either acid or alkaline media, an extended lifetime in highly corrosive soils is assured
- Strong steel adhesion: 20 times more adhesive than traditional plastic tape systems
- Excellent cathodic disbondment test results
- Excellent mechanical resistance
- Free of holidays: The hot extrusion method used to perform the coating assures a continuous and a uniform thickness profile, without air bubbles and holiday-free
- High dielectric resistance
- Superior bending ability for pipe laying applications
- High impermeability: Both the high-density polyethylene has low water permeation characteristics that allow improved isolation from the surrounding sea water compared to other coating systems

#### Usage Areas

- Water Distribution Lines
- Petroleum Pipelines
- Natural Gas Pipes
- Foundation Piles
- Industrial Pipe Network
- Steel Structures
- Compressed Air Line Pipes
- Drilling Wells
- Transportation of High Temperature Water
- Shipyard and Harbor Pile

## » Technical Specifications

Production Standards	Steel Grades
<b>API 5L</b>	L175/A25, L175P/A25P, L210/A, L245/B, L290/X42, L320/X46, L390/X56, L415/X60, L450/X65, L485/X70, L245R/BR, L290R/X42R, L320N/X46N, L360N/X42N, L390N/X56N, L245N/BN, L290N/X42N, L320Q/X46Q, L360Q/X52Q, L390Q/X56Q, L245Q/BQ, L290Q/X42Q, L320M/X46M, L360M/X52M, L390M/X56M, L245M/BM, L290M/X42M, 415N/X60N, L450Q/X65Q, L485Q/Z70Q, L415Q/X60Q, L450M/X65M, L485M/X70M, L415M/X60M
<b>EN 10217-1</b>	P195TR1-P195TR2, P235TR1-P235TR2, P265TR1-P265TR2, S235JR, S275JR
<b>EN 10219-1</b>	S235JRH, S275J0H, S275J2H, S275NH, S275NLH, S355J0H, S355J2H, S355K2H, S355NH, S355NLH, S460NH, S460NLH, S420, S460, X60, X65, X70
<b>AWWA C200</b>	ASTM A-570, ASTM A-36, ASTM A-283
<b>ASTM A53</b>	Grade A, Grade B
<b>ASTM A252</b>	Grade 1, Grade 2, Grade 3
<b>ISO 3183</b>	L175/A25, L175P/A25P, L210/A, L245/B, L290/X42, L320/X46, L390/X56, L415/X60, L450/X65, L485/X70, L245R/BR, L290R/X42R, L320N/X46N, L360N/X42N, L390N/X56N, L245N/BN, L290N/X42N, L320Q/X46Q, L360Q/X52Q, L390Q/X56Q, L245Q/BQ, L290Q/X42Q, L320M/X46M, L360M/X52M, L390M/X56M, L245M/BM, L290M/X42M, 415N/X60N, L450Q/X65Q, L485Q/Z70Q, L415Q/X60Q, L450M/X65M, L485M/X70M, L415M/X60M
<b>EN 10208-2</b>	L245MB, L290MB, L360MB, L415MB
<b>EN 10224</b>	L235, L275, L355
<b>EN 1090-2</b>	L175/A25, L175P/A25P, L210/A, L245/B, L290/X42, L320/X46, L390/X56, L415/X60, L450/X65, L485/X70, L245R/BR, L290R/X42R, L320N/X46N, L360N/X42N, L390N/X56N, L245N/BN, L290N/X42N, L320Q/X46Q, L360Q/X52Q, L390Q/X56Q, L245Q/BQ, L290Q/X42Q, L320M/X46M, L360M/X52M, L390M/X56M, L245M/BM, L290M/X42M, 415N/X60N, L450Q/X65Q, L485Q/Z70Q, L415Q/X60Q, L450M/X65M, L485M/X70M, L415M/X60M, S235JRH, S275J0H, S275J2H, S275NH, S275NLH, S355J0H, S355J2H, S355K2H, S355NH, S355NLH, S460NH, S460NLH, S420, S460
Coating Standards	
<b>DIN 30670</b>	
<b>EN 10288</b>	
<b>AWWA C213</b>	

## » LCA Information

### Declared unit

1 tonne (1000kg) of fabricated steel product manufactured in Adana facility (TR).

### Reference service life

Not applicable

### Time representatives

The production data in this LCA study represents the period of 1<sup>st</sup> January 2020 and 31<sup>st</sup> December 2020.

### Database(s) and LCA software used

Simpro v9.2 and Ecoinvent v3.7.

### Description of system boundaries

Cradle to gate (A1-3) with options, modules C1-C4, module D.

weights, amounts of raw materials used, product content, energy consumption, transport figures, water consumption and amounts of wastes. For A1 and A2 modules, according to EN 15804:2012+A2:2019, generic data was applied and was obtained from Ecoinvent v3.7.

### Allocation

Mass allocation has been applied for preconsumer recycled materials according to EN 15804:2012+A2:2019.

### Cut-off rules

Life Cycle Inventory data for a minimum of 99% of total inflows to the three life cycle stages have been included and a cut-off rule of 1% regarding energy, mass and environmental relevance was applied. Impacts caused by treatment operations have been calculated lower than 1% environmental relevance.

10

### Data quality and data collection

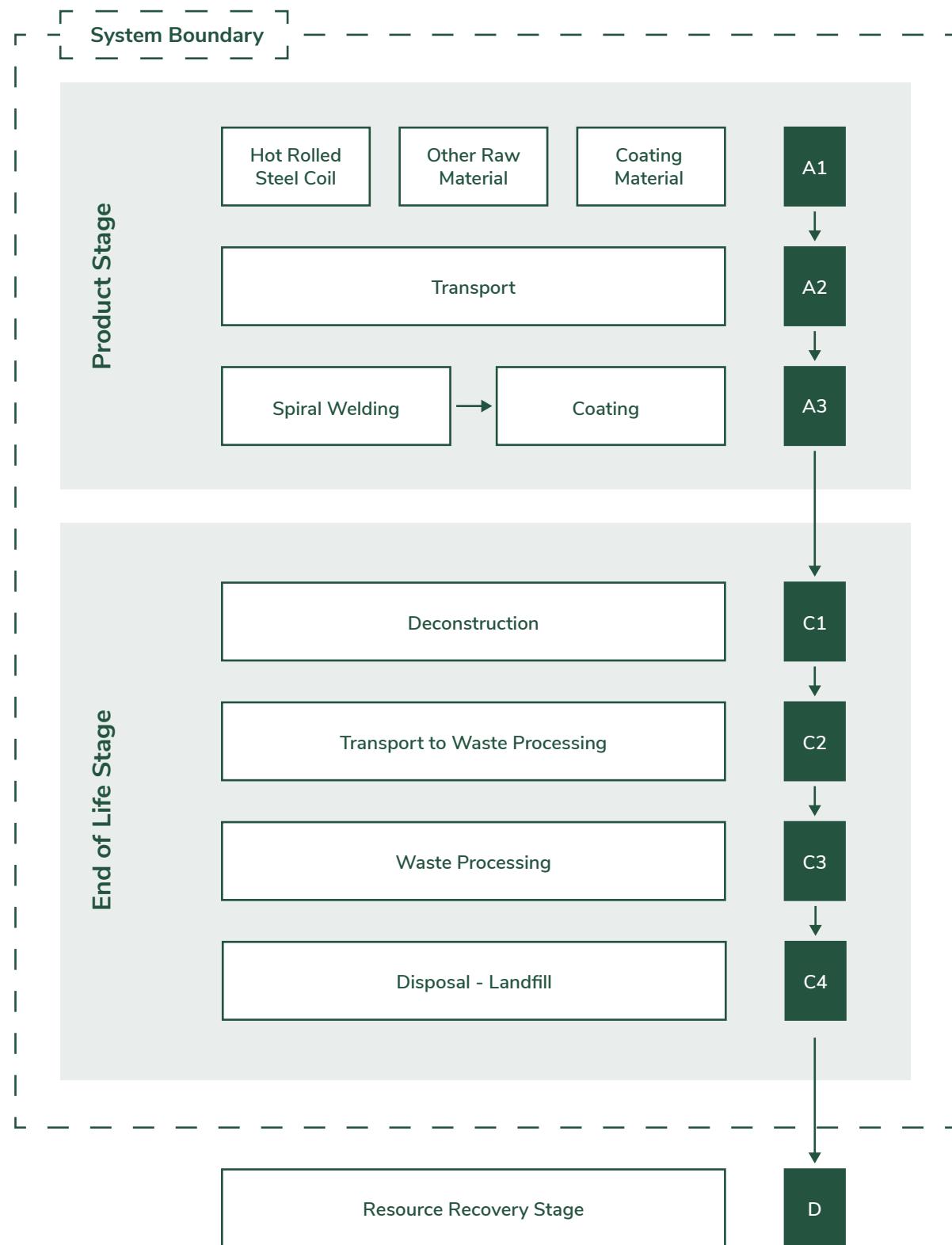
According to EN 15804:2012+A2:2019 specific data was used for module A3 (Processes the manufacturer has influence over) and was gathered from Mazlum Boru Adana plant. Specific data includes actual product

## » Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation

	Product Stage			Construction Process Stage		Use Stage							End Of Life Stage				Resource Recovery Stage
	Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling Potential
MODULES	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Module declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	TR	TR	TR	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>99.5%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-products	Not Relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-sites	Not Relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Declared; ND = Not Declared

## » System Diagram



## » Description of Declared Modules

### A1 - Raw Materials Supply

This stage takes into account raw material extraction, processing and energy used in the production process.

### A2 - Transport to the Manufacturer

This stages include transportation of the raw materials from supplier to factory gate. Transportation types are considered as seaway, road, railroad, etc.

### A3 - Manufacturing

This stage includes energy and water consumption during the manufacturing process. Additionally, packaging materials are covered by this stage. Followed production processes are as;

- Spiral Welding
- Coating

12

### C1 - De-construction

The dismantling of steel pipe has a very low impact considering the impact throughout the life of the installation. It is assumed that, in C1 module, same electricity and diesel is consumed as during the construction installation of steel pipe.

### C2 - Transport to Waste Processing

An average distance of 100km has been assumed for the transport to recycling facility. Transport is calculated on the basis of a scenario with the parameters described in the table below.

Parameters C2 Module	
Transport by road*	Lorry >32 metric ton
Distance (km)	100
Database	Ecoinvent v3.7

\*Technology is euro 5

### C3 - Waste Processing for Reuse, Recovery and/or Recycling

The material and energy expenses required for Module C3 are negligible. It is assumed that there is no sorting or processing required for steel pipes.

### C4 - Final Disposal

100% of used product after the lifetime will be collected and recycled into the manufacturing system. It is assumed that 5% of the product is lost during deconstruction and 95% is reached to recycling system. The recycling rate of steel products is assumed to be 95% based on Annex C of the Product Environmental Footprint Guidance of European Commission.

### D - Reuse, Recovery or Recycling Potential

Scrap inputs to the production stage are subtracted from scrap to be recycled at end of life in order to obtain the net scrap output from the product system. This remaining net scrap is then delivered to recycling process. Module D reports the environmental aspects of recycled scrap generated at the end of life minus that used at the production stage.

### Information on Which Life Cycle Stages Are Not Considered

This EPD only covers the Cradle to Gate A1-3, C1-4 and D stages because other stages are very dependent on particular scenarios and are better developed for specific building or construction works.



13

## » Content Declaration

### Content declaration of 1000kg of Polyethylene Coated Spiral Welded Steel Pipes

Material	Share
Hot rolled steel coil	94.3%
Polyethylene	5.72 %
Renewable material	0%
Biogenic carbon	0%

# Environmental Performance

## » Potential Environmental Impact *Mandatory Indicators According to EN 15804*

Results for 1000kg of Polyethylene Coated Spiral Welded Steel Pipes							
Indicator	Unit	A1:A3	C1	C2	C3	C4	D
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	1925	1.36	9.05	0	0.845	-1127
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	14.2	0.033	0.019	0	0.001	-8.08
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	2.50	0.002	0.003	0	7.48E-05	-0.935
<b>GWP-total</b>	kg CO <sub>2</sub> eq	1942	1.39	9.07	0	0.846	-1136
<b>ODP</b>	kg CFC 11eq	1.16E-04	7.66E-08	2.13E-06	0	1.15E-07	-6.35E-05
<b>AP</b>	mol H+ eq	9.06	0.007	0.037	0	0.003	-5.15
<b>EP-Freshwater</b>	kg PO43- eq	1.19	0.001	0.005	0	4.44E-04	-0.684
	kg P eq	0.111	9.89E-05	6.50E-05	0	2.90E-06	-0.061
<b>EP-Marine</b>	kg N eq	2.16	0.001	0.011	0	1.10E-03	-1.26
<b>EP-Terrestrial</b>	kg N eq	19.7	0.013	0.126	0	0.010	-11.4
<b>POCP</b>	kg NMVOC eq	7.94	4.78E-03	0.041	0	0.003	-4.72
<b>ADP-minerals &amp; metals*</b>	kg Sb eq	0.014	9.81E-06	2.12E-05	0	6.13E-07	-8.92E-03
<b>ADP-fossil*</b>	MJ	25801	20.1	141	0	7.79	-16090
<b>WDP</b>	m <sup>3</sup>	923	1.06	0.466	0	0.342	-557

**Acronyms** **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-luluc** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## » Potential Environmental Impact Additional Mandatory and Voluntary Indicators

Results for according to PCR2019:14 for 1000kg of Polyethylene Coated Spiral Welded Steel Pipes							
Indicator	Unit	A1:A3	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq	1865	1.30	8.97	0	0.744	-1089
Results for according to EN 15804+A2 for 1000kg of Polyethylene Coated Spiral Welded Steel Pipes							
PM	[disease inc]	1.44E-04	4.13E-07	8.15E-07	0	5.40E-08	-8.58E-05
IRP	[kBq U235 eq]	69.0	0.117	0.619	0	0.032	-40.9
ET-freshwater	[CTUe]	51466	32.7	108	0	5.52	-31212.473
HT-cancer	[CTUh]	2.62E-05	3.79E-08	3.35E-09	0	1.50E-10	-1.62E-05
HT-non-cancer	[CTUh]	5.13E-05	3.37E-08	1.17E-07	0	4.06E-09	-3.10E-05
SQP	[pt]	8085	5.10	162	0	16.8	-4468

### Acronyms

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology; IRP = Ionizing radiation, human health; ET-freshwater = Eco-toxicity (freshwater); HT-cancer = Human toxicity, cancer effects; HT-non-cancer = Human toxicity, non-cancer effects; SQP = Potential soil quality index (SQP)



<sup>1</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## » Use of Resources

Results for 1000kg of Polyethylene Coated Spiral Welded Steel Pipes							
Indicator	Unit	A1:A3	C1	C2	C3	C4	D
<b>PERE</b>	MJ	1940	2.35	1.72	0	0.062	-1023
<b>PERM</b>	MJ	0	0	0	0	0	0
<b>PERT</b>	MJ	1940	2.35	1.72	0	0.062	-1023
<b>PENRE</b>	MJ	27469	21.2	150	0	8.28	-17115
<b>PENRM</b>	MJ	0	0	0	0	0	0
<b>PENRT</b>	MJ	27469	21.2	150	0	8.28	-17115
<b>SM</b>	kg	1047	0	0	0	0	0
<b>RSF</b>	MJ	0	0	0	0	0	0
<b>NRSF</b>	MJ	0	0	0	0	0	0
<b>FW</b>	m <sup>3</sup>	90.2	0.166	0.109	0	0.011	-51.1

**Acronyms** **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy resources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water



## » Waste Production

Results for 1000kg of Polyethylene Coated Spiral Welded Steel Pipes							
Indicator	Unit	A1:A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	36.0	0	0	0	0	0
Non-hazardous waste disposed	kg	0.293	0	0	0	50.0	0
Radioactive waste disposed	kg	0	0	0	0	0	0

## » Output Flows

Results for 1000kg of Polyethylene Coated Spiral Welded Steel Pipes							
Indicator	Unit	A1:A3	C1	C2	C3	C4	D
Component for re-use	kg	0	0	0	0	0	0
Materials for recycling	kg	0	0	0	0	950	0
Materials for energy recycling	kg	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0
Radioactive waste disposed	MJ	0	0	0	0	0	0





## References

- » **ISO 14020:2000**  
*Environmental labels and declarations -- General principles*
- » **ISO 14040:2006**  
*Environmental management -- Life cycle assessment -- Principles and framework*
- » **ISO 14044:2006**  
*Environmental management -- Life cycle assessment -- Requirements and guidelines*
- » **ISO 14025:2006**  
*Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures*
- » **EN 15804:2012+A2:2019**  
*Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction product*
- » **The International EPD® System**  
[www.environdec.com](http://www.environdec.com)
- » **The International EPD® System The General Programme Instructions v3.01**
- » **The International EPD® System PCR 2029:14 Construction products v1.1 (EN 15804:A2)**
- » **Ecoinvent 3.7**  
[www.ecoinvent.org](http://www.ecoinvent.org)
- » **SimaPro LCA Software**  
[www.simapro.com](http://www.simapro.com)
- » **Mazlum Spiral Pipes**  
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